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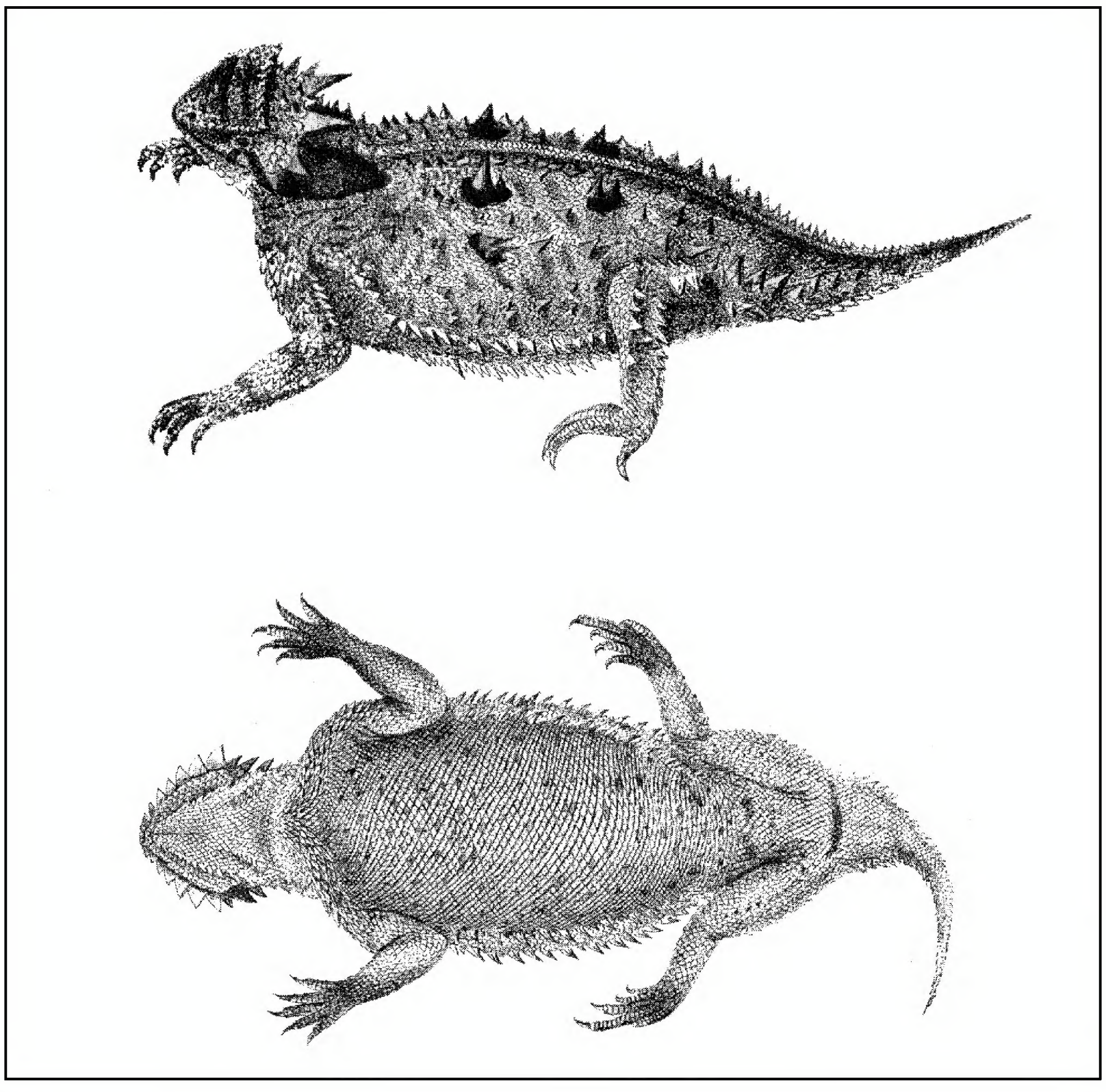

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A Natural History Survey of Texas Horned Lizards (*Phrynosoma cornutum*) in a Rural Subdivision

Annamarie Saenger*, Erika Saenger, Tricia Saenger* and Walt Saenger

Introduction

The Saenger family, formerly of Willcox, Arizona, conceived and carried out this project looking at Texas horned lizards in our 16-hectare rural subdivision. It grew out of our curiosity about the many Texas horned lizards (*Phrynosoma cornutum*) we encountered around our house and neighborhood. We wondered if we were seeing the same lizards over and over or different lizards each time. In 1998, we began capturing and marking the lizards we saw, releasing them back at the point of capture.

As a result of research regarding conservation issues related to Texas horned lizards, we decided to implement a systematic search component to our work to see if the lizards were equally distributed throughout the varied habitats in the neighborhood. We decided to utilize a route made by four roads traversing our rural subdivision and committed to surveying the entire route at each outing to achieve an equal sampling effort. Beginning in 2000, we collected additional information on time of capture and ambient temperature as well as recording general observations. The study ended at the end of August 2001 when we moved away from the area.

Over a four-year period (1998–2001), we marked 277 lizards and recorded many aspects of Texas horned lizard natural history.

Even though the negative impact of human development on Texas horned lizards was referenced frequently in scientific literature, a search did not turn up any studies conducted within a developed area. It is our hope that the information presented here can contribute to a better understanding of the interactions of human development and Texas horned lizards.

This report presents our findings while asking three questions: 1) Do we have a robust population? 2) Can we deduce anything about habitat selection from the systematic searches? 3) What can the mark-recapture study tell us about patterns of movement within the development?

Study area

The study area was located 4.8 km west of the city of Willcox in southeastern Arizona at an elevation of 1270 m. It was classified by the Natural Resources Conservation Service [NRCS] as Rangeland with slopes from 0 to 3% and precipitation from 30.5 to 40.5 cm. Soils in this classification were formed in strongly saline and/or alkaline basin floors with no free water. The soils in this area were mainly classified as Duncan loam with the top 5" of the soil profile consisting of loam. There was also an area of Comoro sandy loam (alkali variant) at the northwest side of the study area although this was not superficially distinguishable. Sandy loam typically occupies the top 36" of the soil profile for this series (NRCS, 2011). Summer precipitation fell in a monsoon pattern from July through September in brief, convective, thunderstorms. May was the driest month of the year.

The study site was a rural subdivision approximately 16 ha in area. It was bordered on the east by a paved road (Taylor Road). Three gravel roads formed a U through the subdivision: West Willow Tree Lane, Sacaton Road, and Cielo Road. The four roads together formed a 1.2 km loop which was used to survey for Texas horned lizards on a regular basis (see Map 1). There were 16 homes in the subdivision (average of one home/ha). The homes varied in age from newly constructed to 20 years old at the beginning of the study. Landscape treatments varied from watered lawns with irrigated trees and shrubs to native vegetation which was kept mowed to about 10 cm. Large areas of regenerating rangeland were located just outside of the north, east and west ends of the subdivision. Plants included mesquite species, graythorn, soaptree yucca, four-wing saltbush, burroweed, bush muhly, Lehman's lovegrass, halogeton, feathered fingergrass and mesa three-awn among other species (Don Decker, NRCS, pers. com.). The southwest corner of the subdivision had two parcels dominated by alkali sacaton grass.

Methods

Mark-recapture method: Each lizard encountered, whether during a systematic search or fortuitously, was marked with a unique color combination of nail polish on their occipital spines, temporal spines, and superciliary spines (terms from Degenhardt et al., 1996) and then returned to the capture location. The capture location was recorded based on distances from fixed features in the study area. Over time, additional data were collected on gender, snout–vent length (SVL), weight, ambient temperature and time of capture. For measuring weights, we used an AccuLab GS-2001 scale that was accurate to 1.0 g. General observations were also recorded.

Systematic searches: The four roads of the study area were systematically searched in their entirety by the same four investigators on a regular basis. We captured and marked all horned lizards observed on the roads or spotted along the sides. Our familiarity with the lizards in our neighborhood allowed us to maximize our search efforts at the times when lizards were most active. Unfortunately, we didn't record start and stop times or searches that were unsuccessful.

Mapping: We mapped the subdivision, including boundaries of distinct land management plots, large, planted trees and shrubs, and colonies of harvester ants (*Pogonomyrmex* spp.) that were located along the roadsides. Harvester ants (*Pogonomyrmex* spp.) are the preferred food of Texas horned lizards (Henke and Fair, 1998; Sherbrooke, 1981) and so the location of the colonies was considered a significant feature.

Data

Demographic data: Over the four seasons of this study, we marked 277 Texas horned lizards: 90 males, 134 females, and 52 juveniles (with one unspecified). Some of these lizards could

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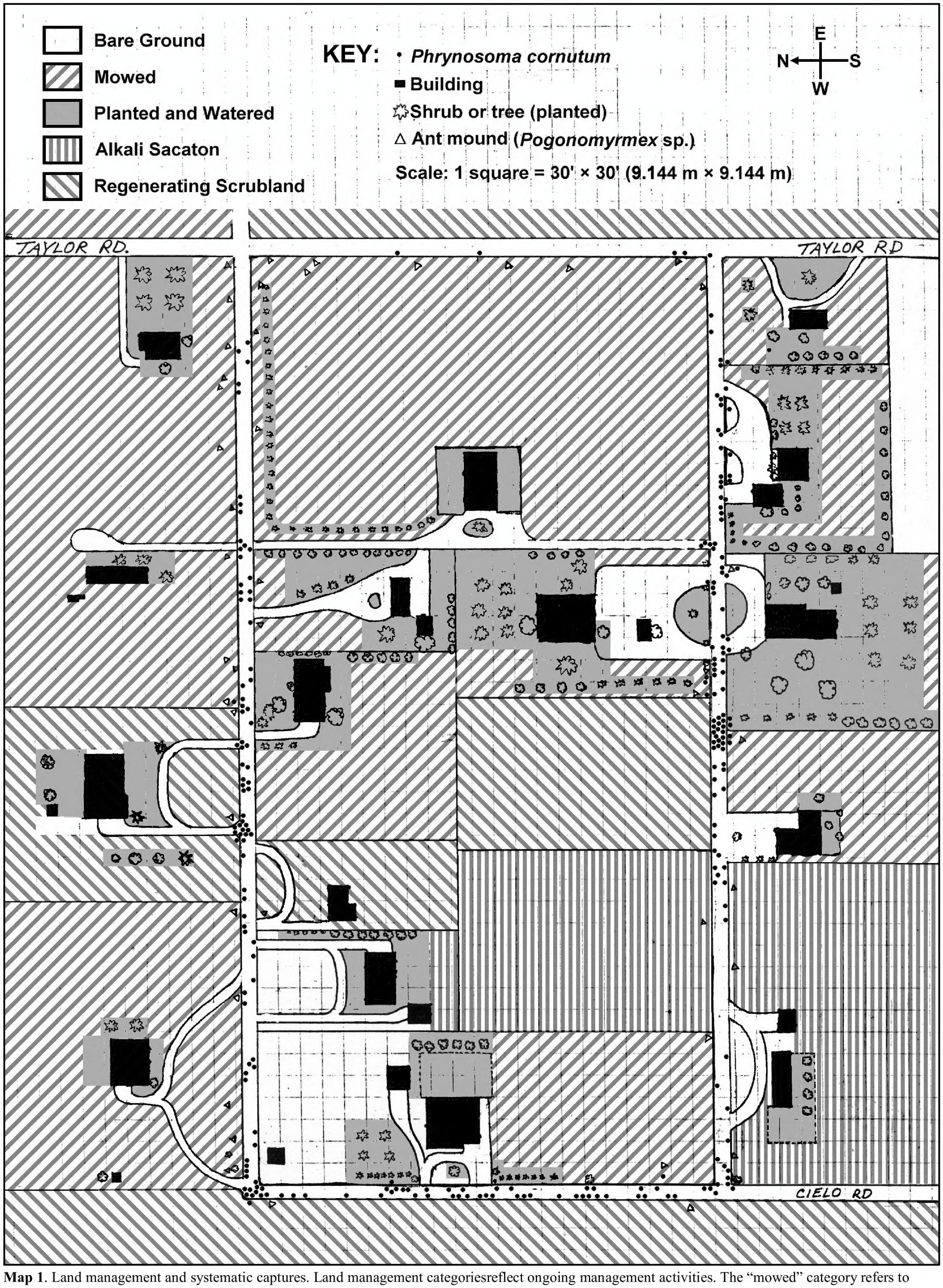


Map 1. Land management and systematic captures. Land management categoriesreflect ongoing management activities. The "mowed" category refers to native vegetation that was regularly mowed to less than 15 cm. The 242 "systematic captures" shown include only those captures that took place during systematic surveys of the four roads transecting the study area. Data were also taken for 35 incidental captures not shown on this map.

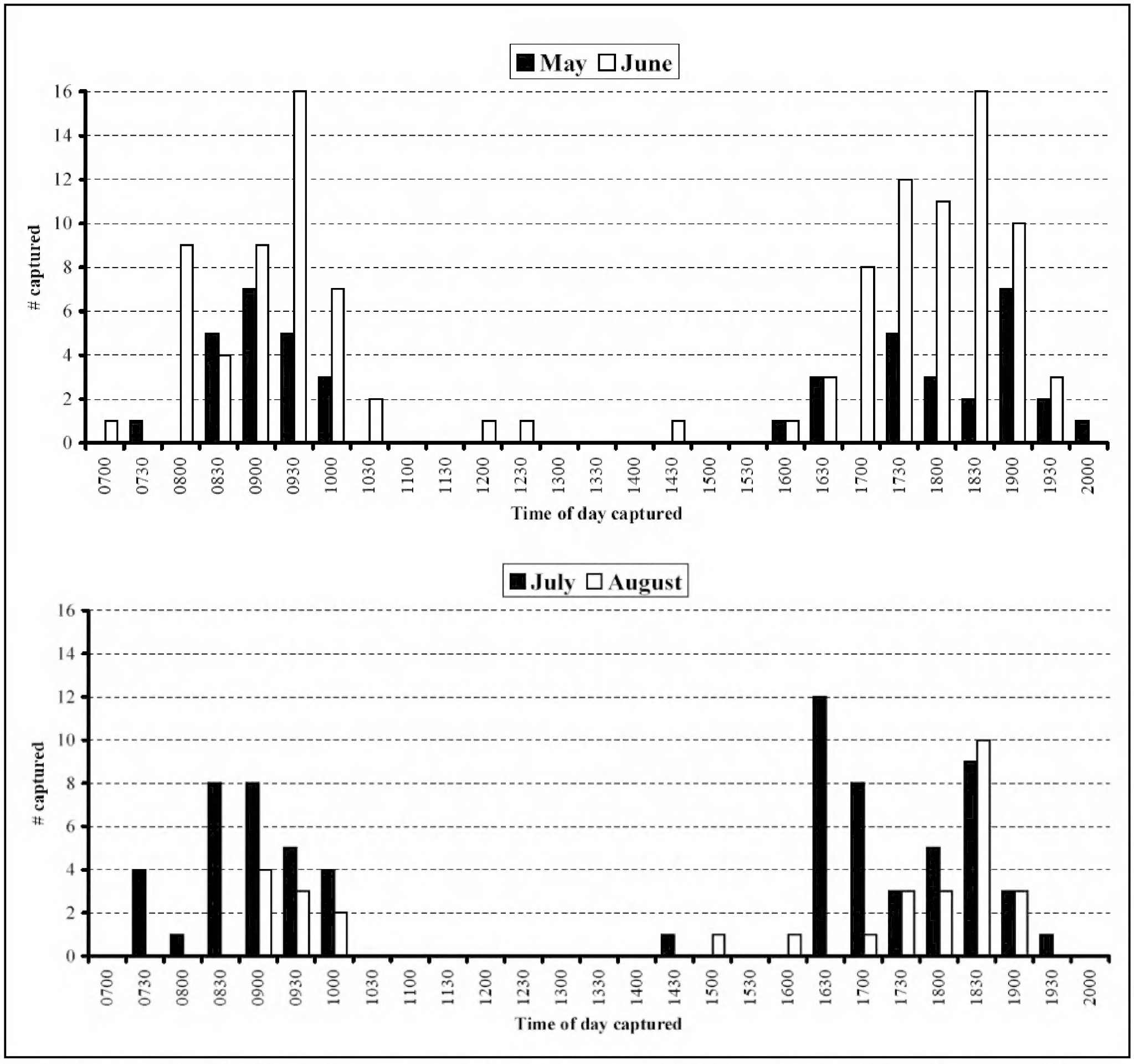


Figure 1. Numbers of Texas horned lizards (*Phrynosoma cornutum*) captured in the years 2000 and 2001, separated into May and June captures (above) and July and August capures (below) and shown by half-hour time intervals.

have been counted more than once as the markings were not permanent (they would be lost whenever the lizards shed). We did not have any information on the periodicity of ecdysis in Texas horned lizards to indicate how enduring our marking system would be, but we did have individuals that were recaptured after periods of 31, 33, 34, 35, 37, 39, 48, 51 and 63 days.

Males averaged 30.5 g (range 14–47) while females averaged 50.4 g (range 19–96.5). Our SVL measurements were accurate only to the nearest centimeter and so weren't suitable for documenting growth over the relevant time frames. The average recorded SVL for males was 7.25 cm (range 5.8– 8.5). The average SVL for females was 8.4 cm (range 6.0–10.0). The bar graphs in Figure 1 show the number of captures versus time of day for each month from May through August. The bar graph in Figure 2 shows the number of captures versus air temperature, broken out by A.M. / P.M.

Recapture data: We mapped the capture locations for all 277 lizards over the four years of our study. Sixty-two individual lizards were recaptured at least once and there were 93 total recaptures. The percentage of marked lizards recaptured increased each year of the study. We recaptured 7% of the marked lizards in 1998, 15% in 1999, 16% in 2000, and 35% in 2001 (the season of most intensive effort).

The average number of days between captures was 12 days. The shortest interval was 1 day and the longest was 63 days.

The average weight change for males was a net positive 1.6 g over an average of 15 days. Calculating an average weight change for female lizards was not useful as their weights fluctuate with reproductive status. Figures 3 through 6 plot weight changes versus capture dates for recaptured lizards.

The locations of consecutive captures for each individual are

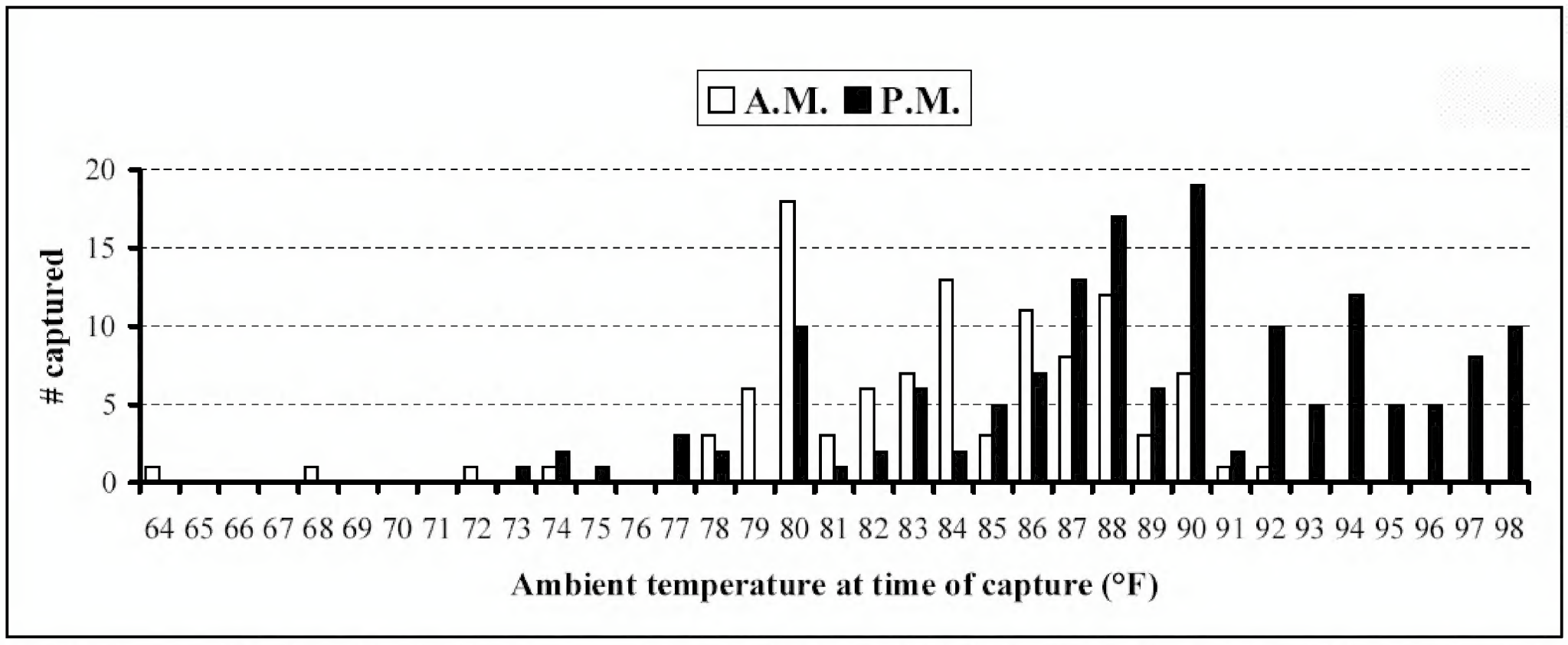


Figure 2. Numbers of Texas horned lizards (*Phrynosoma cornutum*) captured in the years 2000 and 2001, separated into morning and evening captures and shown by 1 °F ambient temperature intervals.

shown on Maps 2 through 5. Map 1 can be referenced to relate capture locations with extant habitats.

Mating: Eight incidents of mating were observed during the study period. Curiously, the observations, although not numerous, occurred in a very narrow window in each season.

Table 1. Mating dates.

1998	1999	2000	2001
13 July	16 June	29 May*	31 May***
13 July	16 June	31 May	
15 July		29 May**	

* One male displaced a mounted male to mate with a female; a third male was nearby.
** A male and female were found together but not actually mating.
*** Female was found after mating; one occipital spine missing; base bloodied

Nesting activity: Nesting activity (hole digging) was observed six times during the study period. Each occurrence took place on the edge of a gravel road or the edge of a gravel driveway, never in the middle. We watched the complete nesting process on 2 July 2000 and marked the nest site. The female lizard weighed 39 g after completing the nest (we did not disturb her until she was finished covering the nest) and had a recorded SVL of 8.6 cm. On 8 November 2000 we dug up the nest and were able to recover five eggshells.

Table 2. Nesting activity dates.

Date	Time	Temperature
2 July 2000	0930–1020	82 °F
16 June 2001	1755	95 °F
16 June 2001	1820	95 °F
18 June 2001	1820	94 °F
24 June 2001	1910	92 °F
29 July 2001	2000	N/A

In addition, three recaptured females exhibited precipitous weight loss within a three-day period that we believed corresponded with egg laying.

Table 3. Nesting weight losses.

Dates	Weights (g)	Losses (g)	Losses (%)
12–15 July 1998	96.5–53	43.5	45
25–29 June 2000	93–58	35	38
21–24 July 2000	59–32	27	46

On 15 June 2001 and again on 16 June, we captured a female Texas horned lizard in our driveway. She weighed 60 g. On 17 June 2001 we found the same female dead in our driveway. We weren't sure how she had died and thought that she had possibly been stepped on as there was a depression in the dirt where she may have been lying barely concealed. She had a dried egg stuck to her back, a torn egg stuck to her right hind leg, and one egg half in her vent and half out. On dissection, we found 12 large eggs internally (making a total count of 15 eggs). Underneath these eggs were clusters of white bodies we thought might be developing ova. We also dissected the stomach and found a solid mass of white nematodes (reference: Sherbrooke, 1981). There was a bolus of ants as well, but it looked like there were more nematodes than ants by volume.

Predation: Potential predators of Texas horned lizards in the study area included skunks, various raptors, roadrunners, coachwhips and diamondback rattlesnakes. Roadrunners and snakes were not numerous. We did not see any clear instances of predation during this study. Domestic cats were observed catching fence lizards and whiptail lizards but were never observed catching Texas horned lizards or eating them. Although there were many dogs in the area, we didn't see any predation by dogs. Two dogs (golden retrievers) were observed carrying Texas horned lizards in their mouths multiple times. They did not appear interested in killing them and the lizards were res-

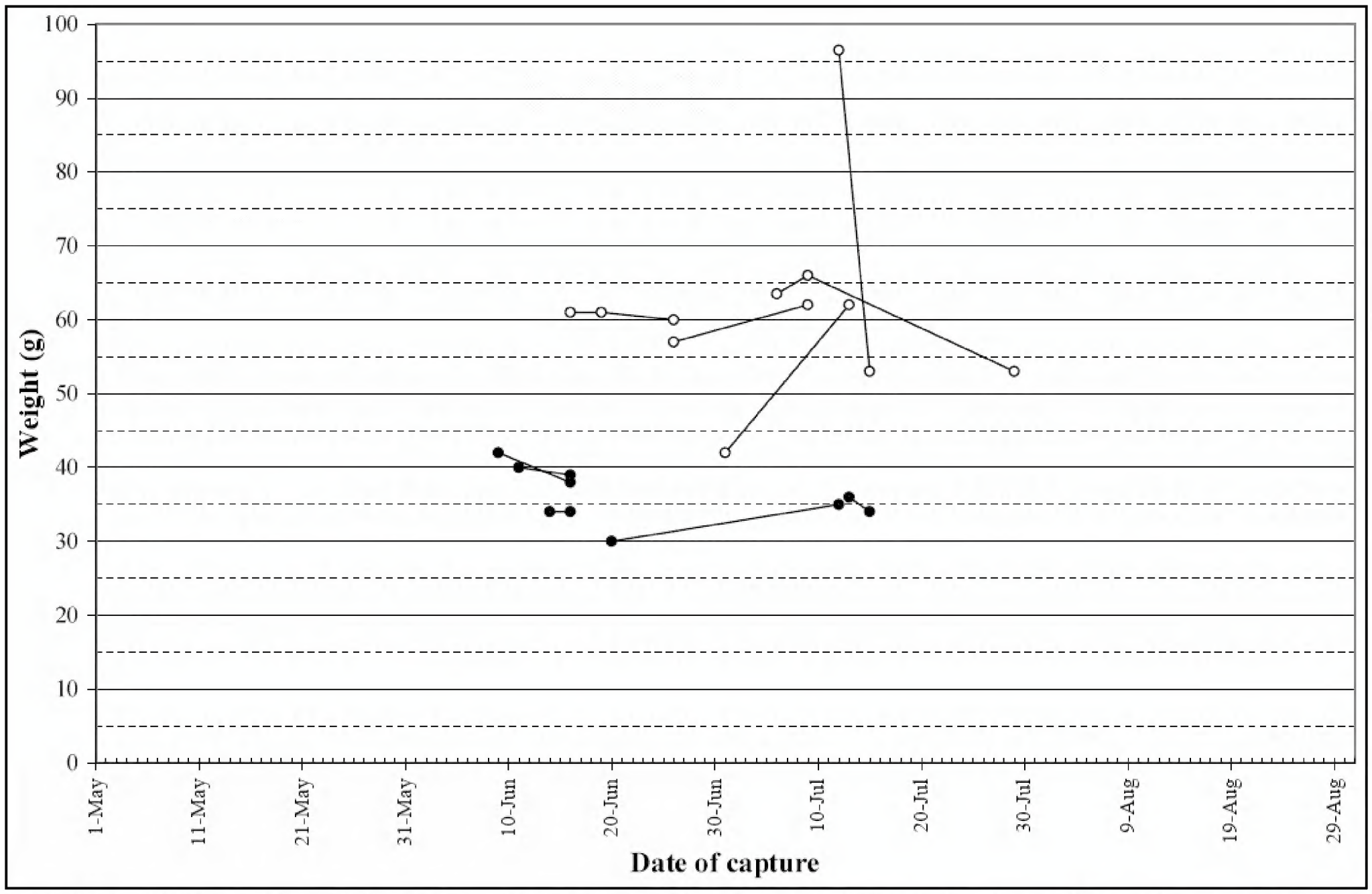


Figure 3. Recaptures: years 1998–1999. Weights versus capture dates for ten Texas horned lizards (*Phrynosoma cornutum*) that were recaptured at least once in the study area. Males and females indicated by solid and open circles respectively.

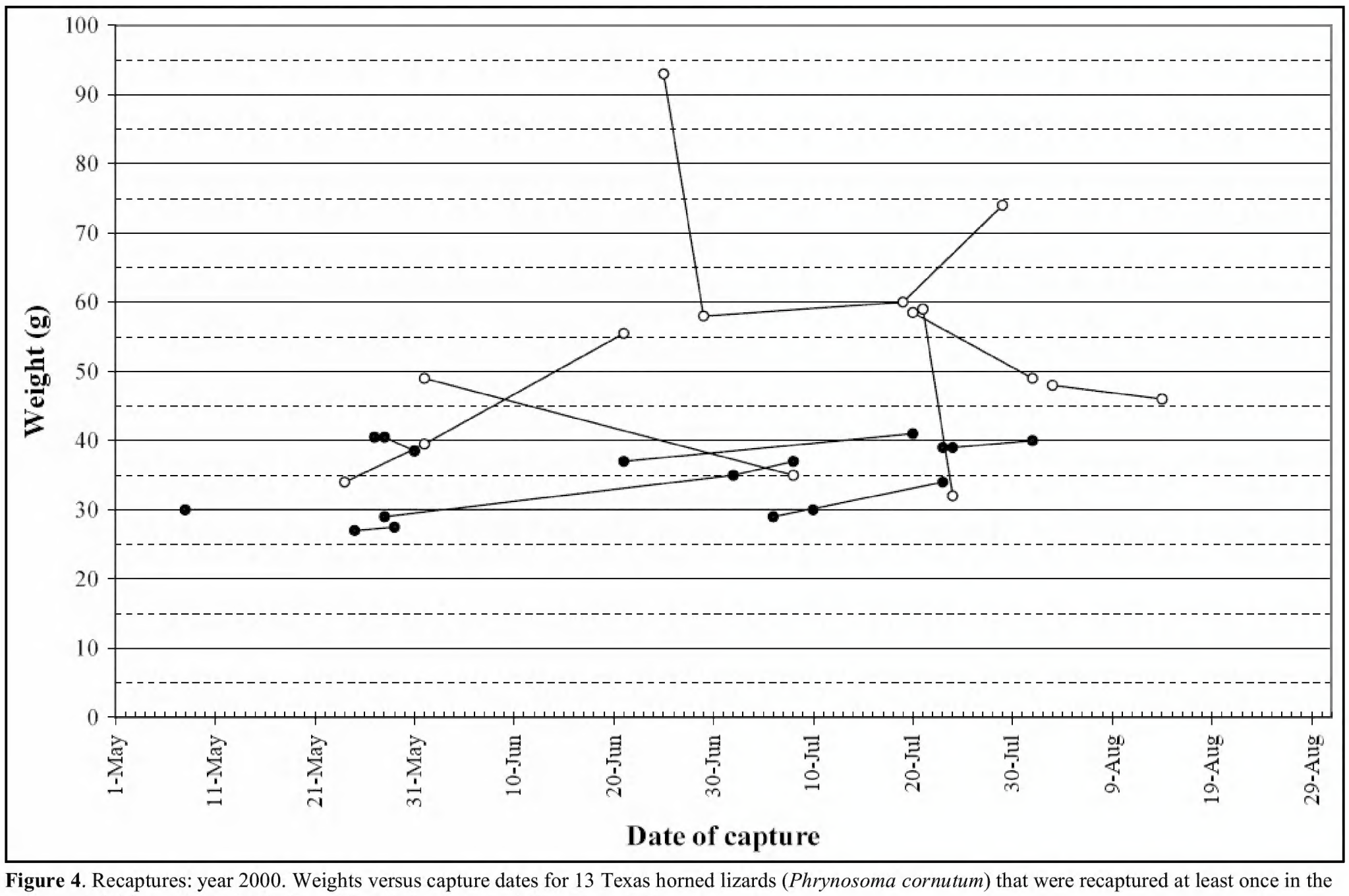


Figure 4. Recaptures: year 2000. Weights versus capture dates for 13 Texas horned lizards (*Phrynosoma cornutum*) that were recaptured at least once in the study area. Males and females indicated by solid and open circles respectively.

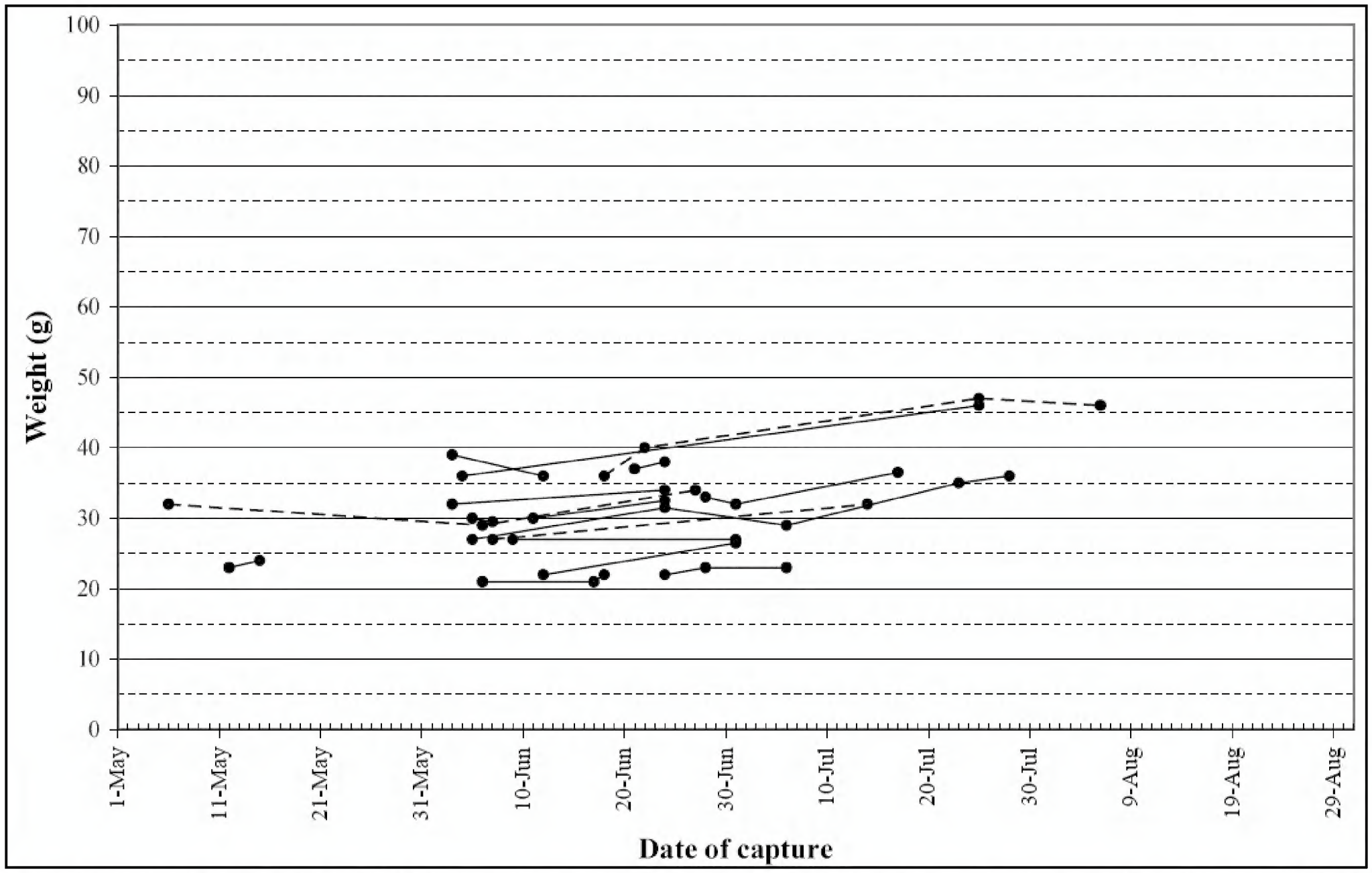


Figure 5. Recaptures: year 2001 males. Weights versus capture dates for 16 male Texas horned lizards (*Phrynosoma cornutum*) that were recaptured at least once in the study area (dashed lines used for clarity for three lizards).

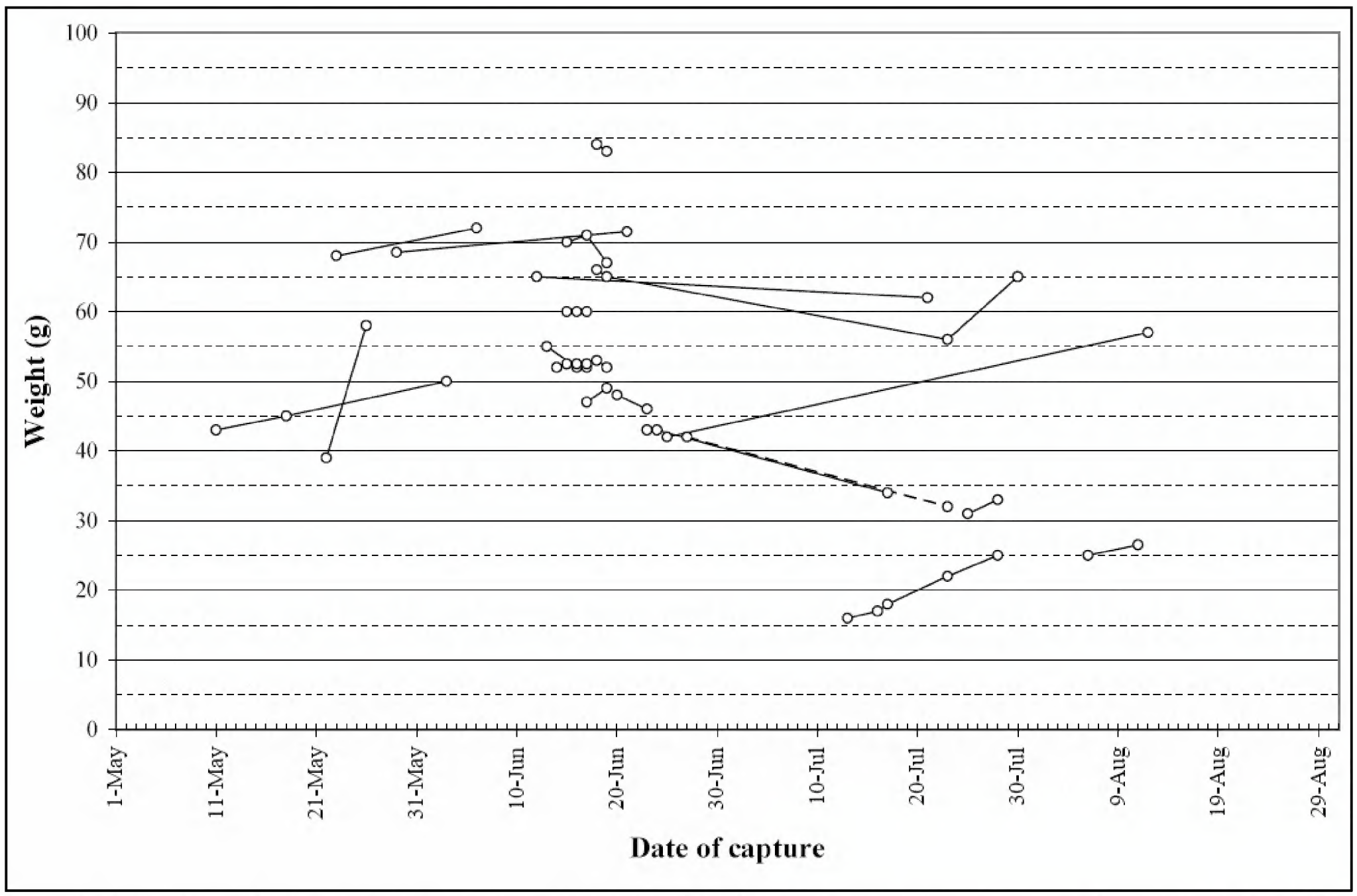
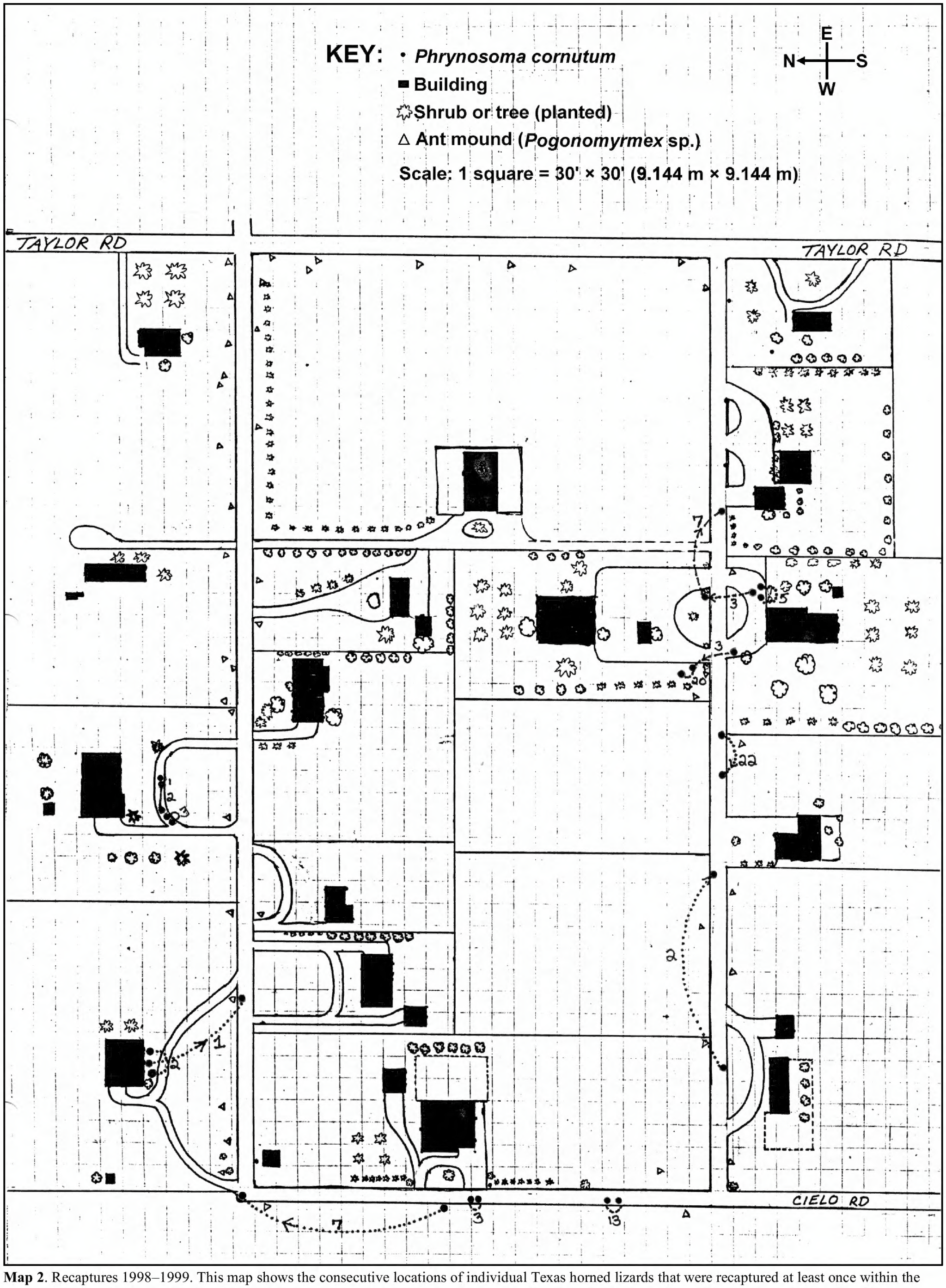
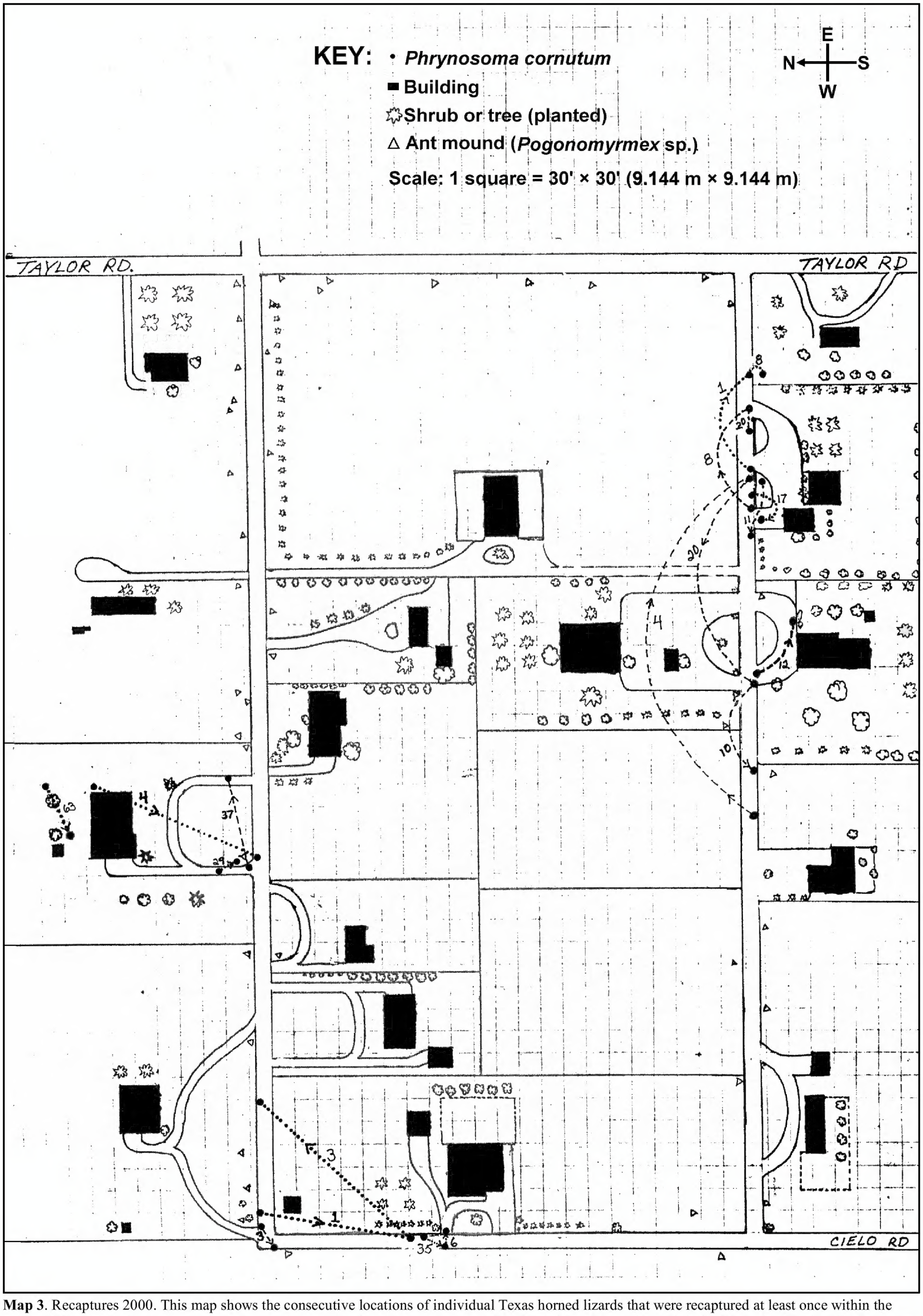


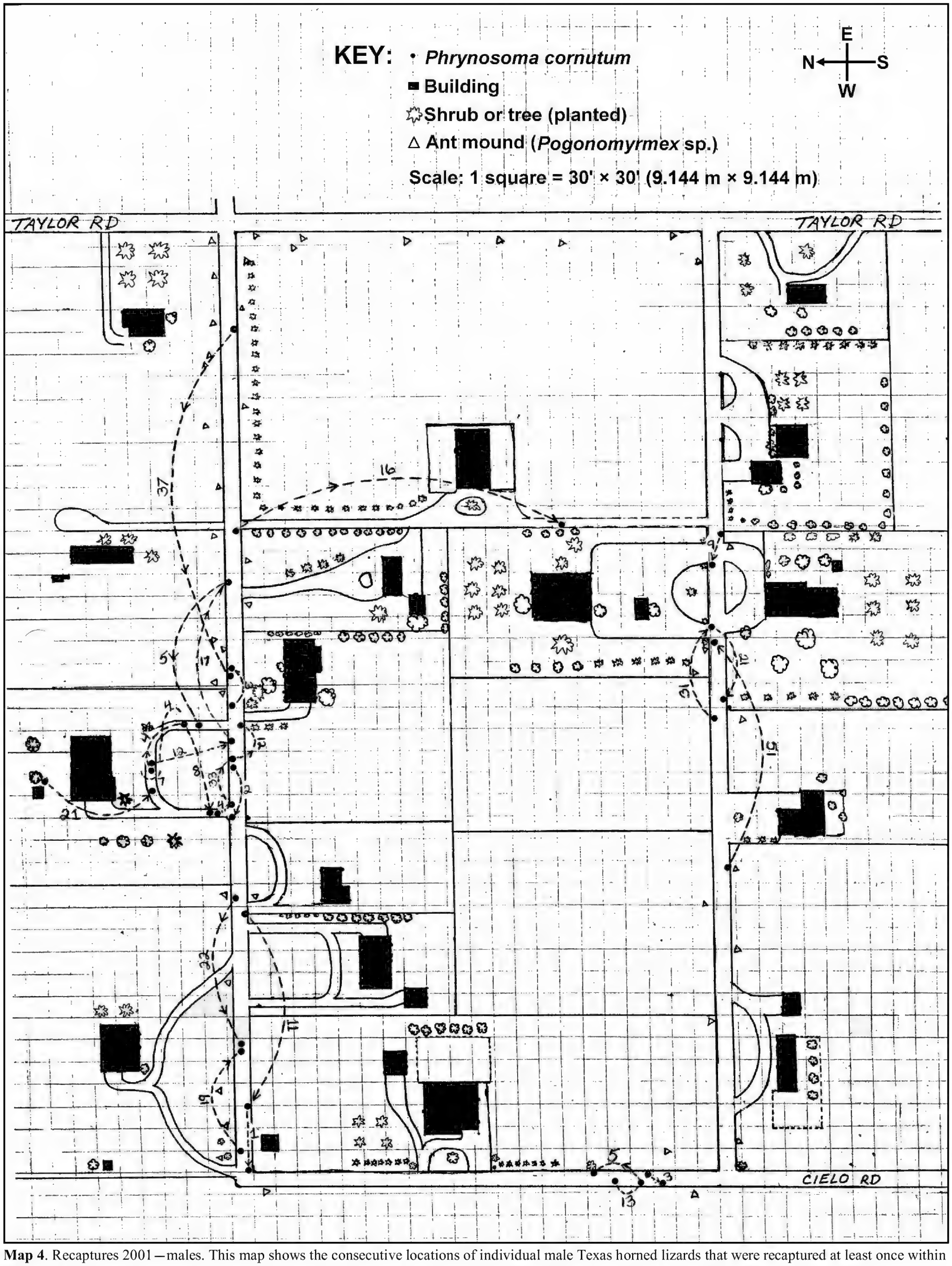
Figure 6. Recaptures: year 2001 females. Weights versus capture dates for 20 female Texas horned lizards (*Phrynosoma cornutum*) that were recaptured at least once in the study area (dashed line used for clarity for one lizard).



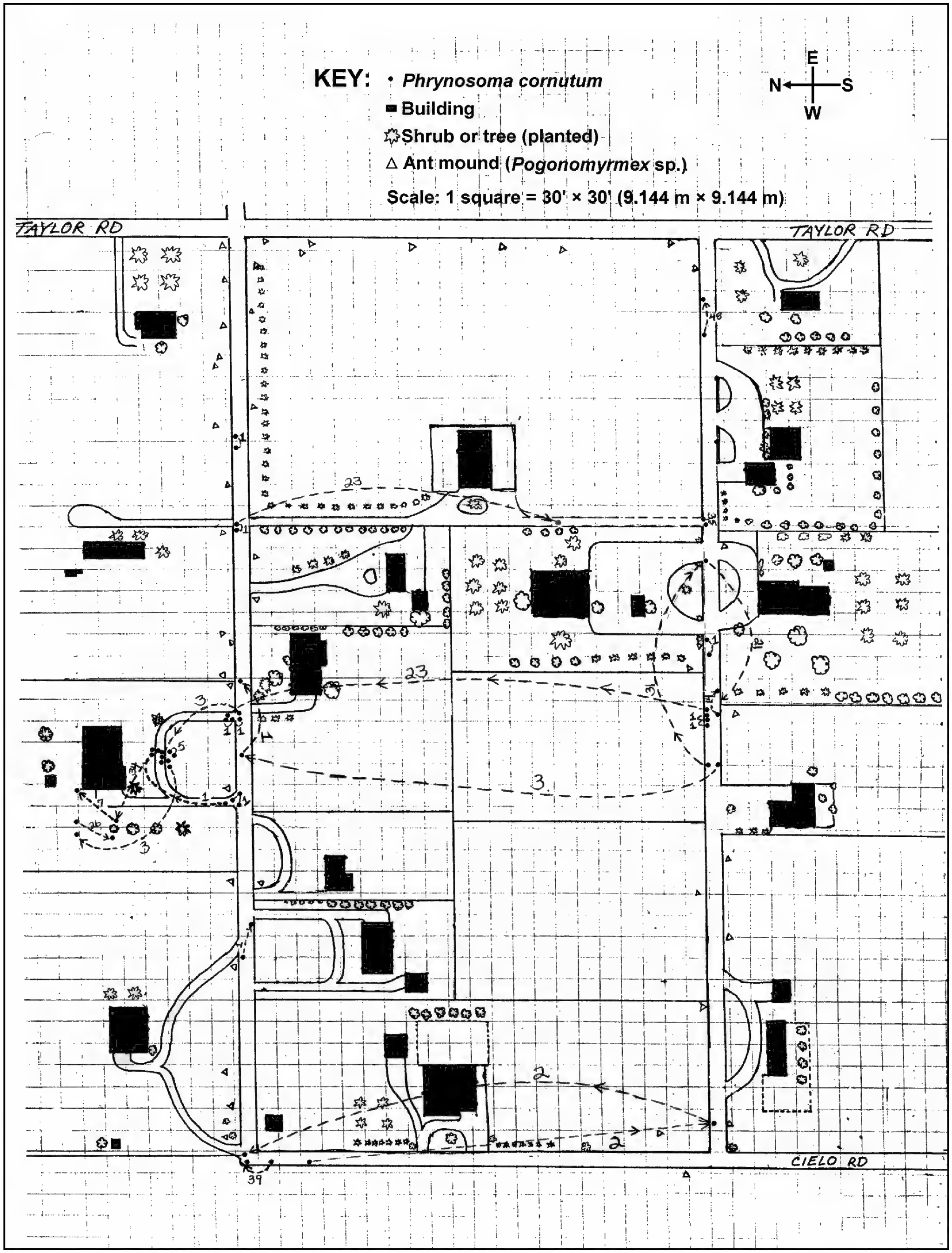
Map 2. Recaptures 1998–1999. This map shows the consecutive locations of individual Texas horned lizards that were recaptured at least once within the entire study area during the 1998 and 1999 seasons. Consecutive locations are connected by dotted lines for males and dashed lines for females. The numerals specify the number of days between successive capures.



Map 3. Recaptures 2000. This map shows the consecutive locations of individual Texas horned lizards that were recaptured at least once within the entire study area during the year 2000 season. Consecutive locations are connected by dotted lines for males and dashed lines for females. The numerals specify the number of days between successive capures.



Map 4. Recaptures 2001—males. This map shows the consecutive locations of individual male Texas horned lizards that were recaptured at least once within the entire study area during the 2001 season. Consecutive locations are connected by dashed lines. The numerals specify the number of days between successive capures.



Map 5. Recaptures 2001—females. This map shows the consecutive locations of individual female Texas horned lizards that were recaptured at least once within the entire study area during the 2001 season. Consecutive locations are connected by dashed lines. The numerals specify the number of days between successive capures.

cued. This was interesting as Sherbrooke (1981) documented canid sensitivity to *Phrynosoma* blood that the lizards squirt out of sinuses near their eyes as a defense.

Deaths : Over the four-year study period six marked lizards were found dead on the graveled roadways. Five of these dead lizards—three males and two females—were found in June 2001. One female was found dead in August 2000. All of the deaths appeared to be the result of being run over by vehicles (lizards were flattened but showed no other obvious injuries such as tooth-marks, etc.). Taylor Road was the one paved road in the study area and it formed the eastern boundary. Seven unmarked lizards were found dead on this road: two small juveniles were found September 1998, four adults were found dead May 2000, and one adult was found dead May 2001. In addition, our notes mention "many dead lizards on Taylor Road" on 1 June 2000 as we were leaving the area on vacation.

Discussion

Texas horned lizards are declining in parts of their range and often habitat fragmentation and human development are listed as possible factors. However, the terms urban development, exurban development, suburban sprawl, etc. are not well-defined. We could not find a study that actually monitored a population of Texas horned lizards in a developed area amongst homes. In the following three parts, we evaluate our data with regard to existing studies and within the parameters of our rural subdivision.

Part I—Is this population thriving?

An important aspect of this study is being able to use our data to determine if Texas horned lizards were thriving in the study area with its attendant level of human development. We felt there were many indications that the population was doing well using data from both the systematic searches and the mark-recapture study component.

We encountered Texas horned lizards frequently, often on a daily basis. Our cumulative search time increased each season and, significantly, the number of captures increased along with the concomitant increase in effort. We captured and marked 42 individuals in 1998, 46 in 1999, 79 in 2000, and 110 in 2001. The mark-recapture data documented individuals being recaptured within the study area repeatedly over long periods of time (e.g., 1–2 months). This would appear to indicate that the lizards found suitable habitat within the study area. Mating and nesting behaviors were observed on multiple occasions. Evidence of actual nesting was documented by significant weight loss (>35%) for several individual females over brief periods of several days (see Table 3). Nesting success was verified by the presence of numerous hatchlings (defined as individuals under 5 g) in the study area. Most hatchlings were encountered during the months of September and October. Over this period in 1998 and 1999 we caught 21 hatchlings. We were unable to conduct surveys in September and October of 2000 and 2001. More than half of male lizards recaptured showed weight gains over an average interval of 16.9 days (female weights fluctuated with reproductive status and so were not as useful in this respect).

All of these factors (individuals staying in the area, reproductive success, increased numbers with increased effort, etc.) were indicative of a robust population that was thriving despite the impact of human development in the area.

Part II—Habitat selection

The main goal of our systematic searches was to see if Texas horned lizards were encountered equally throughout the area or not. If they were not equally distributed, did they appear to be exhibiting a preference for a particular habitat type by being concentrated in a specific area?

Results: The capture locations from the systematic searches did not appear to be evenly distributed. There were several areas of clustered captures but it was difficult to ascertain a correlation of any of these with a particular habitat variable. There were two distinct areas of avoidance, however. Particularly, the northeast end of the study area appeared to have fewer captures. This was not the result of prey limitation as there was a relatively high density of harvester ant colonies (*Pogonomyrmex* spp.) at the east end. This area, however, had two notable distinctions.

The first noteworthy distinction was the presence of large tracts of mowed native vegetation. These areas were kept mowed very short with the predominant result being a lack of woody shrubs and other canopy cover. The importance of woody shrubs for thermoregulation in Texas horned lizard habitats was noted in studies by Burrow et al. (2001) and Whitford and Bryant (1979).

The second distinction is that the eastern end is bounded by the paved road, Taylor Road. It carried more automobile traffic than the other three roads in the development. This paved road section made up one-sixth of the length of the survey route and yet accounted for 54% of the recorded deaths of Texas horned lizards (7 out of 13). These 7 deaths all involved unmarked lizards suggesting that our 277 marked lizards avoided this area.

There also appears to be a lack of captures in the roadway bordered by two alkali sacaton grass plots on the southwestern side of the study area. These two plots are dominated by alkali sacaton and lack woody shrubs. Although alkali sacaton commonly reach heights up to a meter, they are not woody and do not provide the same supportive structure for lizards to ascend.

Analysis of these observed patterns assumes that capture locations were a function of the surrounding habitats. As they were captured on roadways, it is possible that capture locations were a result of fidelity to a travel corridor rather than habitat selection.

Part III—Mark-recapture results

Our mark-recapture study involved capturing all Texas horned lizards encountered within the study area, whether fortuitously, during a systematic search, or through a neighbor's assistance (phone call). Each capture provided an instantaneous snapshot of where a particular lizard was at the moment. It did not, however, provide any information as to what path the lizard traveled to get there. Published studies looking at the movements of Texas horned lizards have noted considerable variation among individuals. Fair and Henke (1999) recorded average

minimum daily movements as varying from 0.0 m to 246.7 m. They also noted that while most of their radio-transmittered lizards exhibited daily patterns of movements, some lizards did not. In their study, the measure of "total area of use" varied widely among individuals. Munger (1984b) studied whether Texas horned lizards had home ranges. He noted that although these lizards had restricted areas of activity, there was substantial inter-individual variation. As for daily movements, Whitford and Bryant (1979) established an average of 46.8 m/day with a range of 9–91 m/day, while Fair and Henke (1999) calculated an average of 36.5 m/day. They also noted several lizards that traveled more than 100 m in a day and one that traveled over 200 m/day. All figures presented were cumulative calculations of zigzagging segments, not final straight line displacements. The variation in individual behavior noted in these studies was reflected in our results. Four females were found in their initial locations over three successive days while one female covered a 201 m displacement in 2 days and another 175 m in 2 more days. Given that Texas horned lizards follow a zigzag course throughout the day (Whitford and Bryant, 1979; Fair and Henke, 1999), this female traveled much farther than the cumulative total of 376 m would indicate.

Most recaptured lizards showed small displacements from their original capture site compared to the time interval involved. This does not necessarily mean that they did not travel widely in the interim, but the trend itself is striking. One lizard was recaptured about 9 m from its original capture site after 35 days. The recapture displacement for another lizard was about 15 m over 39 days while for yet another lizard the displacement was about 3 m over 35 days. The result of this trend is shown in the recapture maps where the arcs connecting consecutive captures for individual lizards occupy discrete sectors of the study area (see Maps 2–5). Although there were long intervals between recaptures for many lizards, there were only three lizards that were documented crossing the study area from north to south out of 62 individuals that were recaptured.

It is difficult to draw conclusions from these data because of the unknown travels in between captures. However, these results might be seen as supporting, in total, studies showing that Texas horned lizards restrict their areas of use (Munger, 1984b; Fair and Henke, 1999; Whiting et al., 1993).

Part IV—General observations

One species: The Texas horned lizard was the only *Phrynosoma* species we found in the study area although it is within the range of three other *Phrynosoma* species (*P. modestum*, *P. solare* and *P. douglasii*) according to Sherbrooke (1981) and Stebbins (1985). Willcox, Arizona, is near the western edge of the range of Texas horned lizards.

Activity periods: Reports of daily and monthly activity periods for Texas horned lizards vary depending on location and local climatic conditions (e.g., Ruthven and Simpson, 1997, among others). The horned lizards in our study began to appear sporadically in early to mid-May. The highest activity (reflected in captures) was in June although activity continued into July and August. Hatchlings (defined here as individuals < 5 g) were mostly caught in September and October with one individual, weighing less than 1 g, caught on 9 November 1999. Study lizards demonstrated a bimodal activity pattern. They were mostly active from 0730 to 1030 and again from 1600 to 1930 (see Figure 1) throughout the season. Ambient temperatures at which the lizards were most active were higher in the evening with numerous lizards caught at 98°F while no lizards were caught at temperatures over 92°F in the morning (see Figure 2).

Dissection: On the morning of 17 June 2001, we found a female horned lizard that had died from an unknown cause. She had a dried egg stuck to her back, a torn egg stuck to her right leg and one egg positioned half out of her vent. On dissection, she was found to have 12 large, fully formed eggs extending up the sides of her abdominal cavity (making 15 eggs total). White clusters of what we thought were ova, lay underneath the eggs. Inside her stomach was a solid mass of white nematodes (as described by Sherbrooke [1981]). There was a bolus of ant exoskeletons as well but it looked like there were more nematodes by volume. Does an excessive nematode load ever contribute to death? This animal may have been stepped on as the body lay near a shallow depression where she may have been lieing barely concealed.

Missing occipital spine: Did a mating struggle result in the amputation of an occipital spine? On 31 May 2001, we observed two lizards mating. The female appeared to be struggling to dislodge the male, who had hold of one of the female's occipital spines in his mouth. We did not disturb the mating couple. Later we returned to see if we could capture them. We found one female in the area with a missing occipital spine, the base of which appeared bloody and freshly injured. We can not verify that she was the lizard we saw mating but it is suggestive.

Mating pheromones?: On 29 May 2000 at 0845 hours, we found two Texas horned lizards mating in the middle of a study road. We then watched another male approach, climb on top of the mating male, nip at him, and drive him off. The three of them were captured at that point for processing when another male was noticed, heading towards the first three lizards. Were the males responding to a chemical trail that brought them all to the same female? Interestingly, on 7 June 2001, while making observational notes of an individual's behavior, TS recorded that the lizard was "appearing to eat ants as it goes," but that no ants were seen on the ground. The notes included the question: "Is it picking up dirt or sensing something on the ground?" These two observed behaviors might be indicators of pheromone tracking.

Conclusion

Spreading human development is an inexorable process throughout the world. Subdivisions, often the leading edge of human-impacted areas, are difficult places to conduct field research due to many factors such as private property access restrictions, inability to control variables in the study area, and small pockets of varied habitats. Varying degrees of habitat fragmentation can also make it difficult to separate potentially negative components and identify possible positive components.

This study took place within an area that was heavily modified by human activity. The Texas horned lizards in this study

could not avoid interacting with a human-impacted environment. Despite these conditions, we found indications that the study subjects were thriving. We captured increasing numbers of individuals as our commitment increased, males averaged positive weight gains, and we found hatchlings to verify successful reproduction. Relatively short displacements between recapture sites implied a restricted area of activity that would only occur within an adequate or supportive environment. High recapture rates (a maximum of 35% in 2001) suggested a general fidelity to the site.

Systematic searches of the study area indicated that regions of the study area lacking woody shrubs were avoided although areas of preference were not obvious.

Our study had many limitations, however, it continued over four years and involved countless hours of walking and observation and resulted in a great deal of accumulated data. It is hoped that the totality of the observations presented here will provide a useful reference for future studies of the interaction of Texas horned lizards with human development.

Acknowledgments

First and foremost, we would like to thank Roger Repp for being a supportive mentor and very good friend. Throughout this study, many people gave us encouragement and took their time to look over our data and answer questions. Their support provided an incentive to ask even more questions and to expand our study. Also, without their encouragement, this material would have languished in a box for eternity! We would like to thank Roger Repp, Don Swann, Wade Sherbrooke, Stephane Poulin, Craig Ivanyi, the Tucson Herpetological Society and the Horned Lizard Conservation Society. We owe you a debt of gratitude. We hope this finished product meets with your approval.

We also want to publicly acknowledge that this study would not have been as extensive as it was without the benefits we enjoyed from homeschooling. Our return to public school in August of 2000 curtailed our data collection for September and October of that year.

Literature Cited and Additional References

Ballinger, R. E. 1974. Reproduction of the Texas horned lizard, *Phrynosoma cornutum*. Herpetologica 30(4):321-327.

Burrow, A. L., R. T. Kazmaier, E. C. Hellgren and D. I. Ruthven. 2001. Microhabitat selection by Texas horned lizards in southern Texas. Journal of Wildlife Management 65(4):645-652.

Degenhardt, W. G., C. W. Painter and A. H. Price. 1996. Amphibians and reptiles of New Mexico. Albuquerque: University of New Mexico Press.

Endriss, D. A., E. C. Hellgren, S. F. Fox and R. W. Moody. 2007. Demography of an urban population of the Texas horned lizard (*Phrynosoma cornutum*) in central Oklahoma. Herpetologica 63(3):320-331.

Fair, W. S., and S. E. Henke. 1997. Effects of habitat manipulations on Texas horned lizards and their prey. Journal of Wildlife Management 61(4):1366-1370.

Fair, W. S., and S. E. Henke. 1999. Movements, home ranges, and survival of Texas horned lizards (*Phrynosoma cornutum*). J. Herpetology 33(4):517-525.

Henke, S. E. 2003. Baseline survey of Texas horned lizards, *Phrynosoma cornutum*, in Texas. The Southwestern Naturalist 48(2):278-282.

Henke, S. E., and W. S. Fair. 1998. Management of Texas horned lizards. Wildlife Management Bulletin No. 2. Caesar Kleberg Wildlife Research Institute, Texas A&M University–Kingsville.

Howard, C. W. 1974. Comparative reproductive ecology of horned lizards (genus *Phrynosoma*) in southwestern United States and northern Mexico. Journal of the Arizona Academy of Science 9(3):108-116.

Munger, J. C. 1984a. Optimal foraging? Patch use by horned lizards (Iguanidae: *Phrynosoma*). The American Naturalist 123(5):654-680.

————. 1984b. Home ranges of horned lizards (*Phrynosoma*): Circumscribed and exclusive?. Oecologia 62(3):351-360.

NRCS. 2011. Websoil Survey. http://websoilsurvey.nrcs.usda.gov/ Accessed April 1, 2011.

Pianka, E. R., and W. S. Parker. 1975. Ecology of horned lizards: A review with special reference to *Phrynosoma platyrhinos*. Copeia 1975(1):141-162.

Ruthven, D. C. III, and B. D. Simpson. 1997. Texas horned lizard population structure, abundance, and growth rates. Austin, Texas: Wildlife Division, Texas Parks and Wildlife Department. Wildlife Research Highlights 1997. Vol. 2.. [http://www.tpwd.state.tx.us/publications/pwdpubs/media/pwd_bk_w7000_0280_05_97.pdf]

Sherbrooke, W. C. 1981. Horned lizards: Unique reptiles of western North America. Globe, Arizona: Southwest Parks and Monuments Association.

Stebbins, R. C. 1985. A field guide to western reptiles and amphibians, second edition. Boston: Houghton Mifflin Company.

Whitford, W. G., and M. Bryant. 1979. Behavior of a predator and its prey: The horned lizard (*Phrynosoma cornutum*) and harvester ants (*Pogonomyrmex* spp.). Ecology 60(4):686-694.

Whiting, M. J., J. R. Dixon and R. C. Murray. 1993. Spatial distribution of a popluation of Texas horned lizards (*Phrynosoma cornutum*: Phrynosomatidae) relative to habitat and prey. The Southwestern Naturalist 38(2):150-154.

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Notes on Reproduction of the Chinese Short-limbed Skink, *Ateuchosaurus chinensis* (Squamata: Scincidae), from Hong Kong, China

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Abstract

The reproductive histology of *Ateuchosaurus chinensis* from Hong Kong, China, was studied. It appeared reproduction was seasonal as it occurred in summer months followed by a winter quiescent period. Mean clutch size for four females was 2.3 ± 0.5 SD, range = 2–3. The smallest reproductively active lizards measured 63 mm snout–vent length (males) and 57 mm (females). It appears that *A. chinensis* and its only recognized congener, *A. pellopleurus*, exhibit similar seasonal timing of their reproductive cycles.

The Chinese short-limbed skink, *Ateuchosaurus chinensis*, is known from Vietnam and China (Nguyen et al., 2009). Eggs believed to be those of *A. chinensis* were found in Hong Kong in June (Karsen et al., 1986). Lazell et al. (1999) reported a female *A. chinensis* containing three oviductal eggs collected on Nan Ao Island, China in July. The purpose of this note is to present additional information on the reproductive cycle of *A. chinensis*. Information on the reproductive cycle, such as timing of spermiogenesis, size and number of egg clutches produced, and period of yolk deposition may be helpful in ascertaining phylogenetic affinities and also provides essential life history data for implementing conservation policies. Evidence is provided that suggests reproduction in *A. chinensis* is seasonal.

Methods

A sample of 27 *A. chinensis* consisting of 15 males (mean snout–vent length (SVL) = 67.9 mm ± 8.6 SD, range = 54–81 mm and 12 females (mean SVL = 66.3 mm ± 7.5 SD, range = 56–78 mm) was examined from the herpetology collection of the Peabody Museum of Natural History (YPM),Yale University, New Haven, Connecticut, USA. Skinks were collected 1997–2001.

For histological examination, the left testis was removed from males and the left ovary was removed from females. Enlarged follicles (> 4 mm length) or oviductal eggs were counted. Tissues were embedded in paraffin and cut into sections of 5 µm. Slides were stained with Harris hematoxylin followed by eosin counterstain (Presnell and Schreibman, 1997). Slides of testes were examined to determine the stage of the spermatogenic cycle. Slides of ovaries were examined for the presence of yolk deposition or corpora lutea. Histology slides were deposited in YPM. An unpaired *t*-test was used to compare male and female mean body sizes (SVL) using Instat (vers. 3.0b, Graphpad Software. San Diego, CA).

The following YPM specimens of *A. chinensis* from Hong Kong, China were examined: Lantau Island 11884, 11886, 11887; Nan Ao Island 9102, 9108-9110, 9152, 9621, 9623-9625, 9628, 9629, 9631, 9632, 9864, 9868-9872, 9874, 9877, Tung Ping Chau 9626, 9635, 9636.

Results

There was no significant difference between means of male and female body sizes (SVL), $p = 0.61$, (unpaired *t*-test). Three stages were observed in the testicular cycle (Table 1): (1) Regression in which the germinal epithelium in the seminiferous tubules are reduced to one or two layers of spermatogonia with interspersed Sertoli cells; (2); Recrudescence, in which there is a proliferation of primary and secondary spermatocytes for the upcoming period of spermiogenesis; (3) Spermiogenesis, in which the seminiferous tubules are lined by sperm and/or clusters of metamorphosing spermatids. The one male from January exhibited recrudescence (Table 1). The presence of three of nine males from July with regressed testes suggested the testicular cycle was nearing conclusion. Spermiogenesis was occurring in the other six males from July (Table 1). The smallest reproductively active male (spermiogenesis in progress) measured 63 mm SVL (YPM 9152) and was from July. Four males of slightly smaller sizes from July exhibited regressed testes and were considered as subadults: YPM 9110, SVL = 58 mm; YPM 9864, SVL = 60 mm; YPM 9874, SVL = 58 mm; YPM 9877, SVL = 54 mm.

Four stages were observed in the ovarian cycle (Table 2): (1) Quiescent = no yolk deposition; (2) Early yolk deposition, basophilic yolk granules were present in the cytoplasm; (3) Enlarged follicles > 5 mm; (4) Oviductal eggs. Mean clutch size for four *A. chinensis* was 2.3 ± 0.5 SD, range = 2–3. The clutch of three eggs was previously reported by Lazell et al. (1999) in their examination of YPM 9109, which I subsequently examined. There was no histological evidence (oviductal eggs or corpora lutea and concomitant yolk deposition for a subsequent

Table 1. Monthly stages in the ovarian cycle of *Ateuchosaurus chinensis* from Hong Kong, China.

Month	*n*	Regression	Recrudescence	Spermiogenesis
January	1	0	1	0
June	1	0	0	1
July	9	3	0	6

Table 2. Monthly stages in the ovarian cycle of *Ateuchosaurus chinensis* from Hong Kong, China.

Month	*n*	Quiescent	Early yolk deposition	Enlarged follicles > 5 mm	Oviductal eggs
January	3	3	0	0	0
June	2	0	1	0	1
July	7	4	0	2	1

clutch) to indicate *A. chinensis* produces multiple clutches in the same year. The smallest reproductively active female (2 enlarged ovarian follicles > 5 mm) measured 57 mm SVL (YPM 11886) and was collected in June. Female reproductive activity was restricted to June and July.

Discussion

Based on the presence of three quiescent females and one male exhibiting recrudescence (all from January), my data suggest that *A. chinensis* exhibits a seasonal reproductive cycle, similar in timing to those of temperate zone lizards, (see for example Goldberg, 1972, 1974). This was also reported for the oviparous congener *Ateuchosaurus pellopleurus* from the Ryukyu Archipelago, Japan and Taiwan in which gravid females were observed from May to August (Okada et al., 1992). *A. chinensis* and *A. pellopleurus* are currently the only two recognized members of the genus *Ateuchosaurus* (Uetz et al., 2011). The exhibiting of reproductive cycles with similar timing may be taken as evidence to support their congeneric status.

Acknowledgments

I thank Jacques Gauthier (YPM) for permission to examine *A. chinensis* and Gregory Watkins-Colwell (YPM) for facilitating the loan.

Literature Cited

Goldberg, S. R. 1972. Reproduction in the southern alligator lizard, *Gerrhonotus multicarinatus*. Hepetologica 28(3):267-273.

————. 1974. Reproduction in mountain and lowland populations of the lizard *Sceloporus occidentalis*. Copeia 1974(1):176-182.

Karsen, S. J., M. W. Lau and A. Bogadek. 1986. Hong Kong amphibians and reptiles. Hong Kong: An Urban Council Publication.

Lazell, J., J. Kolby, Y.-M. Lin, D.-H. Zhuang and W. Lu. 1999. Reptiles and amphibians from Nan Ao Island, China. Postilla 217:1-18.

Nguyen V. S., Ho T. C. and Nguyen Q. T. 2009. Herpetofauna of Vietnam. Frankfurt am Main, Germany: Edition Chimaira.

Okada, S., H. Ota, M. Hasegawa, T. Hikida, H. Miyaguni and J. Kato. 1992. Reproductive traits of seven species of lygosomine skinks (Squamata: Reptilia) from East Asia. Natural History Research 2(1):43-52.

Presnell, J .K., and M. P. Schreibman. 1997. Humason's animal tissue techniques, 5th Edit. Baltimore, Maryland: Johns Hopkins Press.

Uetz, P., J. Hosek and J. Hallerman. 2011. The Reptile Database, Zoological Museum, Hamburg, Germany. http:www.reptile-database.org, accessed 13 March 2011.

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What You Missed at the July Meeting

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John Palis is not normal. OK, most of us engaged with these animals are not considered normal by the greater segment of the population, but I don't think John is normal among herpers. We were a small group moving along a trail in southern Illinois, John's familiar stomping grounds. All of us were reasonably experienced herpers. John was trailing. And spotting. Spotting all the animals that the others had passed without seeing. Field herpers know that we never see all the animals, but walking with John I felt as though I wasn't seeing any. And he was always polite about it. "You guys saw this one, right?" Probably we hadn't.

Photograph of John Palis by Dick Buchholz.

John reminds me of a professor. Not the pompous, egotistical, pedantic kind, but the one you wanted for an advisor. He's serious with a sense of humor, dedicated, meticulous, and understanding of others' frailties, such as not being able to see that very obvious cottonmouth. Like any good scientist, he records everything and at the end of the day will be able to relate the day's events in detail from his notes. He was born and raised in Brookfield, Illinois, graduated with a B.S. in zoology from Southern Illinois University and an M.S. in biology from Southeastern University interspersed with working at Brookfield Zoo. He's worked as a zoologist for the Florida Natural Areas Inventory and now is a self-employed consulting biologist. He has authored and coauthored many papers and has done field work in the Midwest and throughout the southeastern U.S. It was my pleasure to have dinner with John and a group that included family and friends who had come to see his presentation. It is easy to understand John's nature when you get to interact with those for whom he cares. From dinner we adjourned to the meeting, which involved a little different set-up than what's become ordinary for us.

Steve Sullivan was nice enough to scrounge a slide projector from the Notebaert for John's presentation, since John only had slides. I described a slide projector for those who had never seen one, and assured them that it was neither harmful nor threatening. John then proceeded with his topic: "Conservation Status of the Flatwoods Salamander (*Ambystoma bishopi–Ambystoma cingulatum* complex) on the Southeastern United States Coastal Plain." John has worked with these animals for over two decades. He knows what he's talking about. For about an hour we were treated to not only an insight into the natural history and conservation of the flatwoods salamander, but also a view of the data gathering that good science requires and the successes and frustrations involved in working with any threatened animal, particularly in the field.

Upon obtaining a full-time job in Florida in the late '80s with the Nature Conservancy, John immediately began searching his field guides for the animals he could expect to find and wanted very much to see. As a fan of ambystomatids, the mole salamanders, John wanted very much to spot the flatwoods salamander. Pictures of the pretty little salamander were followed by pictures of the increasingly rare habitat of longleaf pine flatwoods and savannah in the southeast. This habitat is typified by relatively sterile, sandy soil dominated by grasses and herbaceous undergrowth, parts of which are seasonally inundated. Like the marbled salamander (*Ambystoma opacum*), fall rains bring the flatwoods salamanders to ponds to breed. Unlike marbled salamanders, a leaf-litter-lined pond would be useless to the flatwoods salamanders. They need a pond filled with grasses. Arriving in

The attractive little flatwoods salamander that John Palis has studied for over two decades. This one is a frosted flatwoods salamander, *Ambystoma cingulatum*, from Liberty County, Florida. Photograph by John Palis.

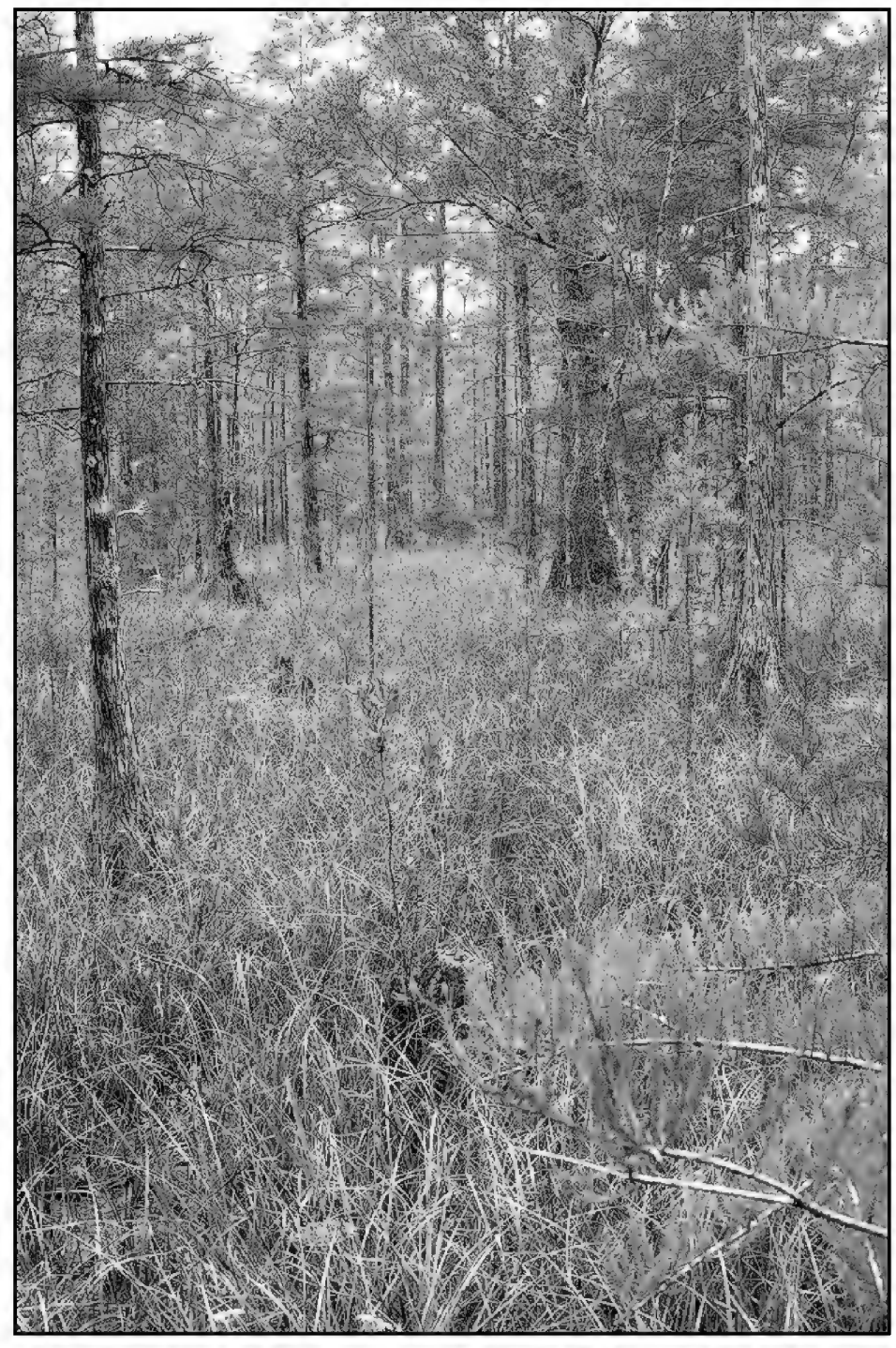
The preferred habitat of the flatwoods salamander, longleaf pine flatwoods. Unfortunately, the areas covered by this ecosystem are in decline. Photograph by John Palis.

This is how the land looks after the silviculture industry has prepared the land for the planting of slash pine. Hard to see how an earthworm could survive this destruction, let alone a pretty little salamander. Photograph by John Palis.

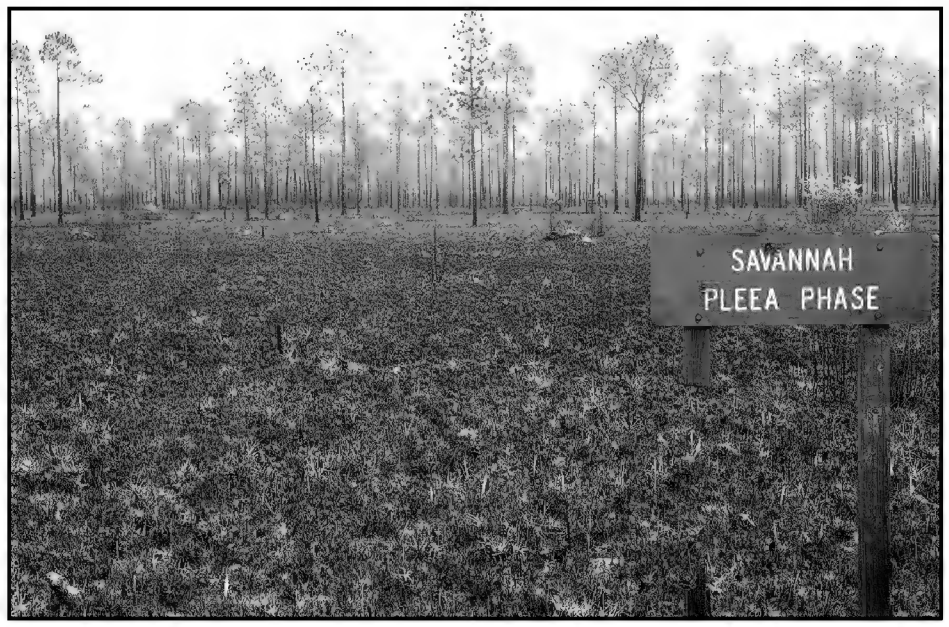
Florida armed with these facts and information on previous sightings, John began searching in the Apalachicola National Forest, but despite having a good idea of the habitat, success did not come easy. The first year he found not one salamander. After conferring with Bruce Means, a herpetologist working out of Tallahassee who had pursued the salamanders in the 1960s and '70s, John continued looking. In late 1989 he found one larva and in the fall of 1990 one juvenile. By this time the salamanders were attracting the attention of a number of agencies and funding for studies became available. John went to work.

He first compared numbers of salamanders seen by Means cruising a particular road in the'70s and '80s with data John collected from the same road in the '90s. Drastic drops in numbers were evident. Bruce Means and John attempted to determine the reasons. Comparison of aerial photos showed us the culprit, silviculture, one of the primary villains in the decline of the salamander, though development also has a huge and growing effect. Interestingly, John also knew of population declines and even eliminations that had no obvious cause. Increased study and surveys showed that only 35% of the sites in Florida that these animals had historically occupied still harbored salamanders. While that doesn't seem like much, that's considerably better than the populations in South Carolina and Georgia have fared, and the salamander is extirpated in Alabama. John had photos of the tremendous damage conventional silviculture preparation does to the land, with heavy machinery turning savannahs into churned vistas resembling the surface of the moon; a landscape that looked as though it could not support any life, let alone a small burrowing salamander. It is then

After 20 years the tree plantations still don't provide the habitat that the salamanders need. The closely-spaced trees allow little light to reach the understory, so the ground has no grasses or herbaceous plants in which the salamanders thrive. Photograph by John Palis.



This is the quintessential breeding pond for the flatwoods salamander, an isolated wetland with pond cypress and a graminaceous and herbaceous understory. John made the point that while this habitat is critical for the survival of these salamanders, only about 10% of their time is spent in this habitat. It's just as important to protect the uplands where the salamanders spend the other 90% of their lives. Photograph by John Palis.



Fire is a key component in maintaining the longleaf pine flatwoods and savannah. While the area may appear devastated, many of the plants in this ecosystem require a fire to germinate. This was burned early in the year. The photo on the right shows the same scene in the fall after a rich green summer. Photograph by John Palis.

A healthy longleaf pine flatwoods and savannah. The same area shown in the lefthand photo as seen in the fall of the year the burn took place. Photograph by John Palis.

planted with slash pine, which grows close together and is as forbidding to the salamanders as it looked to us in the slide.

While John didn't dwell on it, we gleaned some idea of the difficulties involved in field studies as he showed us slides of himself and a colleague deploying a drift fence. Lines had to be cleared of vegetation and trenches dug. While the slides he showed of the habitat looked gorgeous, we fortunately couldn't experience the heat, humidity, and insects. Multiple years of drift fencing at different sites led to confirmation of some of what was already known and expanded our knowledge of the flatwoods salamander. They tend to move with the passing of cold fronts and move together on the same nights. They average only 38 days in the wetlands, pointing to the need to not only conserve that habitat, but also the need to conserve the uplands where they spend the other 90% of their time. They generally leave a pond in the direction from which they entered the pond, showing that they have some homing instinct and don't wander. And at many sites the populations were declining.

Based on the work of John and other researchers, in April of 1999 the U.S. Fish and Wildlife Service listed the flatwoods salamander as threatened. As most of us know, that certainly doesn't insure the survival of the animal. John even showed a soccer field built after the animal was listed on a site that until then had been occupied by the salamanders. Turns out that the USFWS can't monitor all sites and relies on the landowners and developers to self report any projects. But the listing encouraged continued interest in the salamanders and more research. Researchers from the University of California studied the DNA and morphologies of the flatwoods salamander across its range and in 2007 published a conclusion that a researcher in 1950 had hinted at. The population west of the Apalachicola River was not the same species as the population east of the Apalachicola. Now *Ambystoma bishopi* existed west of the river and *Ambystoma cingulatum* reigned east of the river. Because of the dearth of stable and secure populations west of the river compared to east, *A. bishopi*, now the reticulated flatwoods salamander, was upgraded to endangered status and *A. cingulatum*, now the frosted flatwoods salamander, maintained its threatened status.

So why is the flatwoods salamander in trouble and where does it stand today? The longleaf pine flatwoods and savannah is a complex ecosystem where, in spite of the infertility of the soil, 40 plant species may exist in one square meter. Carnivorous plants are common. Animals such as the gopher frog (*Lithobates capito*), gopher tortoise (*Gopherus polyphemus*), and eastern diamondback rattlesnake(*Crotalus adamanteus*) share this environment. The threats of silviculture and development have been mentioned, but even when this unique habitat is protected, it may be threatened. This habitat relies on fire to exist. Indeed, longleaf pine and many of the other plants there cannot germinate without fire, but prescribed burns often are set in the cooler, winter months while natural fires usually occur during the summer. Prescribed fires generally won't burn the wetlands and often are controlled so that they definitely don't, thus allowing brush to shade out the grasses that characterize this habitat. Isolated cypress swamps are logged in all conditions for mulch. Stumps are uprooted and sold as fatwood to start fires. All of our actions have an effect, but maybe we don't need to buy cypress mulch or fatwood to start our fires.

There is some good news. Last year John actually found a salamander in South Carolina where they were thought to no longer exist. The populations in the Apalachicola National Forest, the St. Marks National Wildlife Refuge, and Eglin Air Force Base seem to be strong. But those unexplained disappearances still loom large and there are efforts to build a road right through the habitat in Eglin. The threats continue. We can only hope that John Palis will be studying these little critters 20 years from now. If they are still around, I'm sure he will be.

Unofficial Minutes of the CHS Board Meeting, July 15, 2011

The meeting was called to order at 7:47 P.M. at the Schaumburg Public Library. Board member Lawrence Huddleston was absent.

Officers' Reports

Recording Secretary: Cindy Rampacek read the minutes of the June 17 board meeting and they were accepted with minor corrections.

Treasurer: Andy Malawy shared the June financial reports. We had a record 'Fest. AT&T doesn't believe that we canceled our account and is still billing us. We will continue to fight it.

Membership Secretary: Mike Dloogatch read a list of memberships due to expire, and reported a slight increase in membership this past month. A short discussion ensued about boosting membership..

Sergeant-at-arms: Greg Brim reported that there were 59 people at the June meeting.

Corresponding Secretary: Deb Krohn really enjoys the new cell phone. It has made getting back to people easier. She just has to get used to it because it has many more features than her personal phone.

Committee Reports

Shows:
- Notebaert, First full weekend of each month
- Unity Fest at Marquette Park, September 10
- Unity Walk at Soldier Field, September 24
- NARBC Tinley Park, October 8 & 9
- Snake Day at the Milwaukee Public Museum, November 5

Nick D'Andrea would like to do a show at the Bass Pro Shop in Bolingbrook. He was wondering if the CHS insurance would cover it. All new events and shows must go to the board prior to committing or they should be brought up with the show chair. Jenny will get more info from Nick and clarify some things and email the board.

Adoptions: We have a boa in really bad shape that came in at the last general meeting. Jenny offered to transport it to Dr. Barten. We also had someone adopt a tortoise that has stones. After the adoption, it was found that he had stones and needed expensive treatment. Since the adoption went thru us, we did donate a bit to help cover costs.

Old Business

St. Louis Zoo trip: Deb Krohn and Linda Malawy are trying to organize this. The date will be September 24. We are carpooling, so members can come down either the evening before or spend Saturday night or both. Announcements will be made at the general meetings and online at the CHS web site and forum.

ReptileFest, April 14–15: Our first committee meeting will be August 2 at 7 P.M. at Deb Krohn's house.

Nominating Committee: Linda volunteered. We need two more nonboard members to round out the committee.

New Business

August board meeting: There will be no August board meeting. We will meet again on September 16 at the Schaumburg Public Library.

Iguana cages: A lady has offered the CHS 2 indoor cages and 2 outdoor cages for large lizards. They were previously her iguanas' cages.

Round Table

Nancy Kloskowski brought 9 new baby checkered garter snakes to the meeting. She is leaving with 8.

Mike Dloogatch mentioned that Earthlink rejects all emails from our server. Jason Hood followed up that there are some other issues. . . .

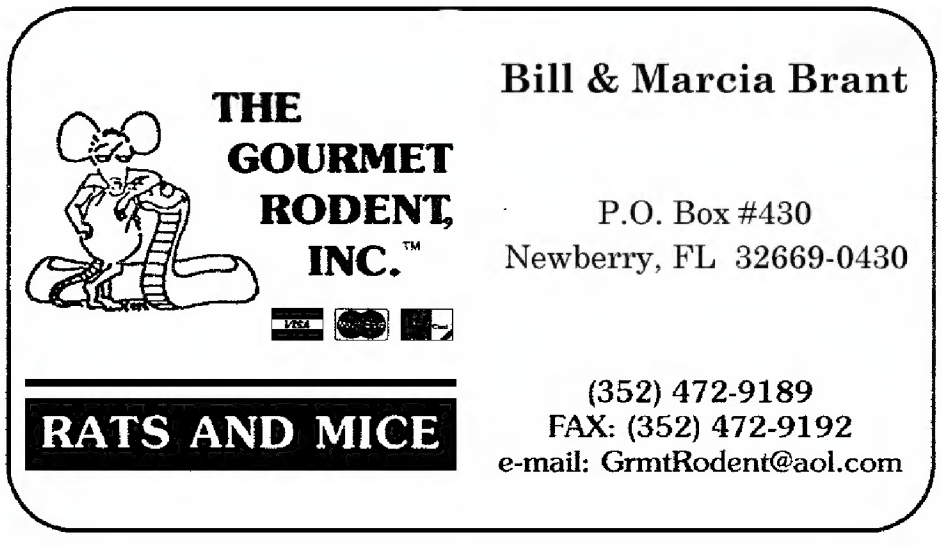
Deb Krohn has a variety of junior high kids who would like to volunteer at 'Fest.

Mike Scott's father passed away on July 1. Everyone would like to offer their condolences.

Linda and Andy were bike riding and they met a young woman. She asked what the path was like and Linda replied that she never went that way. The woman shared that she is walking across America. She is 30 years old, and she had never had an adventure in her life. This is her adventure. She has been planning for five years. Her dog (a husky mix) is going with her and she is from Maine. Her website is ameranth.wordpress.com. She has been through three pairs of shoes and she is pushing a jogging stroller with her supplies. Her name is the same as a porn star so she is using a pen name. Linda was really inspired by her.

Jason mentioned that this time next month, he will be married.

Respectfully submitted by recording secretary Cindy Rampacek



Advertisements

For sale: rats and mice—pinkies, fuzzies and adults. Quantity discounts. Please send a SASE for pricelist or call Bill Brant, *THE GOURMET RODENT*, PO Box 430, Newberry, FL 32669-0430, 352-472-9189, E-mail: GrmtRodent@aol.com.

For sale: from **The Mouse Factory**, producing superior quality, frozen feeder mice and rats. Our mice and rats are vacuum-packed to greatly extend freezer life by reducing freezer burning and preserving vitamin and nutrient content. We feed our colony a nutrtionally balanced diet of rodent chow, formulated especially for us, and four types of natural whole grains and seeds. For a complete price list please visit our web site, www.themousefactory.com. We accept all major credit cards, PayPal or money orders. Call us **toll-free** (800) 720-0076 or send us an e-mail at info@themousefactory.com. Write us at PO Box 85, Alpine TX 79831.

For sale: **high quality frozen feeders**. Over a decade of production and supply. Seven sizes of mice availabe: small newborn pinks up to jumbo adults. Prices start at $25 per 100. Feeders are separate in the resealable bag, not frozen together. Low shipping rates. Free price list. Kelly Haller, 4236 SE 25th Street, Topeka KS 66605, (913) 234-3358 evenings and weekends.

For sale: Trophy quality jungle carpet, diamond-jungle, and jaguar carpet pythons. Website: moreliatrophyclub.com E-mail: junglejohn@tds.net.

Herp tours: **Costa Rica herping adventures**. Join a small group of fellow herpers for 7 herp-filled days. We find all types of herps, mammals, birds,and insects, but our target is snakes. We average 52 per trip, and this is our 10th year doing it. If you would like to enjoy finding herps in the wild and sleep in a bed at night with air-conditioning, hot water and only unpack your suitcase once, instead of daily, then this is the place to do it. Go to our web-site http://hiss-n-things.com and read the highlights of our trips. Read the statistics of each trip and visit the link showing photos of the 40 different species we have found along the way. E-mail at jim.kavney@gmail.com or call Jim Kavney 305 664-2881

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UPCOMING MEETINGS

The next meeting of the Chicago Herpetological Society will be held at 7:30 P.M., Wednesday, August 31, at the Peggy Notebaert Nature Museum, Cannon Drive and Fullerton Parkway, in Chicago. **Carl J. Franklin**, biological curator and collections manager at the Amphibian and Reptile Diversity Research Center, University of Texas at Arlington, will be our speaker. Carl will talk about the unusual and little known Mexican worm lizard (*Bipes biporus*), the only amphisbaenian with legs (albeit front legs only). Never heard of amphisbaenians, let alone the Mexican worm lizard? Come and experience Carl's presentation!

The speaker at the September 28 meeting will be **Richard Sajdak**, former curator of reptiles at the Milwaukee Zoo and author of the recent book, *Hunters in the Trees: A Natural History of Arboreal Snakes*.

The regular monthly meetings of the Chicago Herpetological Society take place at Chicago's newest museum—the **Peggy Notebaert Nature Museum**. This beautiful building is at Fullerton Parkway and Cannon Drive, directly across Fullerton from the Lincoln Park Zoo. Meetings are held the last Wednesday of each month, from 7:30 P.M. through 9:30 P.M. Parking is free on Cannon Drive. A plethora of CTA buses stop nearby.

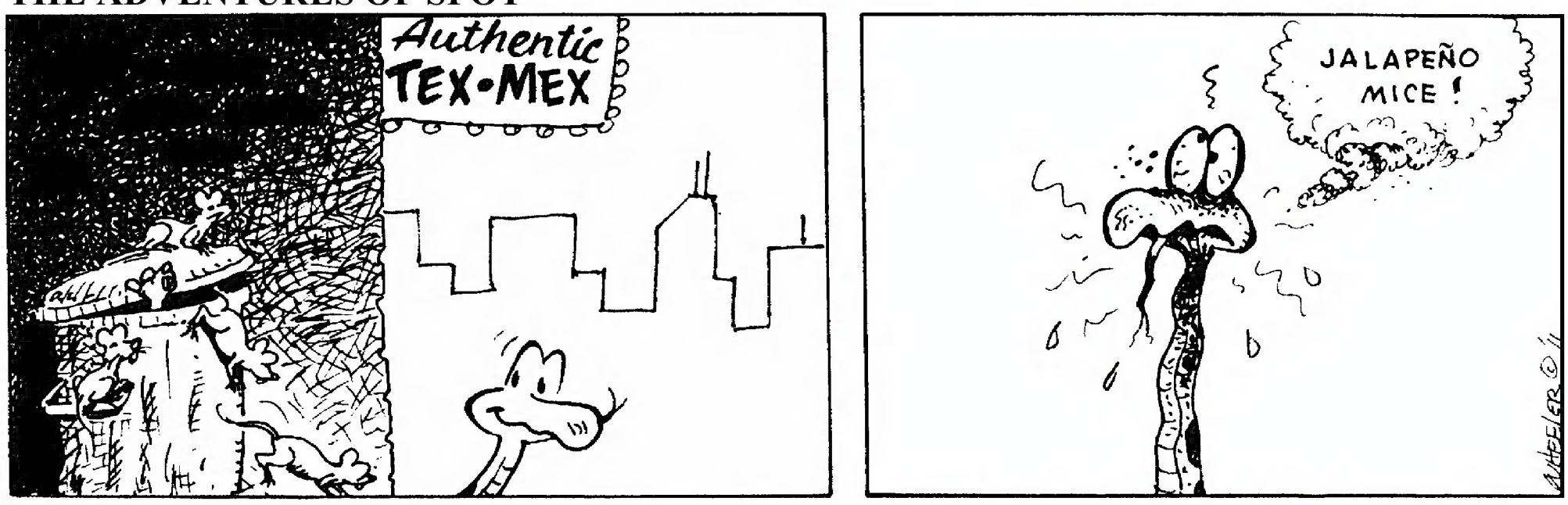
Board of Directors Meeting

Are you interested in how the decisions are made that determine how the Chicago Herpetological Society runs? And would you like to have input into those decisions? If so, mark your calendar for the next board meeting, to be held at 7:30 P.M., September 16, in the adult meeting room on the second floor of the Schaumburg Township District Library, 130 S. Roselle Road, Schaumburg.

The Chicago Turtle Club

The monthly meetings of the Chicago Turtle Club are informal; questions, children and animals are welcome. Meetings normally take place at the North Park Village Nature Center, 5801 N. Pulaski, in Chicago. Parking is free. For more info visit the CTC website: http://www.geocities.com/~chicagoturtle.

THE ADVENTURES OF SPOT



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